Isaac Ray Shoebottom

CS 1073 (FR02A)

Assignment 10

3429069

# Section A

## Source Code (Converter):

/\*\*

\* Class containing the methods for conversion

\* @author Isaac Shoebottom (3429069)

\*/

public class Converter {

/\*\*

\* Convert hexadecimal to base 10

\* @param hex String containing the hex digits

\* @return returns the decimal value

\*/

static long hex2Decimal(String hex) {

String hexChars = "0123456789ABCDEF";

hex = hex.toUpperCase();

long decimal = 0;

int intermediaryValue;

char index;

for (int i = hex.length(), p = 0; i != 0; i--, p++) {

index = hex.charAt(i-1);

intermediaryValue = hexChars.indexOf(index);

if (intermediaryValue == -1)

return -1;

decimal = decimal + intermediaryValue\*(int)(Math.pow(16, p));

}

return decimal;

}

/\*\*

\* Converts the english text to the encoded text

\* @param english String containing standard english

\* @return Returns encoded text

\*/

static String english2Encrypted(String english) {

english = english.toUpperCase();

if (english.length() > 1) {

english = swapFirstAndLastLettersInString(english);

}

for (int i = 0; i < english.length(); i++) {

char index = english.charAt(i);

switch (index) {

case 'E':

english = replaceInString(english, i, "A");

break;

case 'A':

english = replaceInString(english, i, "E");

break;

case 'O':

english = replaceInString(english, i, "I");

break;

case 'I':

english = replaceInString(english, i, "O");

break;

case 'U':

english = replaceInString(english, i, "Y");

break;

case 'Y':

english = replaceInString(english, i, "U");

break;

}

}

return english;

}

/\*\*

\* Replace a letter in a string

\* @param str String to be modified

\* @param index The character's index to be replaced

\* @param replace The string that will be replacing the character

\* @return The string with the string replaced

\*/

private static String replaceInString(String str, int index, String replace){

return str.substring(0, index) + replace + str.substring(index+1);

}

/\*\*

\* Swaps the first and letters in every word in a string

\* @param str The string to be swapped

\* @return The string with letters swapped

\*/

private static String swapFirstAndLastLettersInString(String str) {

StringBuilder output = new StringBuilder();

String[] splitStr = str.trim().split("\\s+");

for(int i = 0; i < splitStr.length; i++) {

if (splitStr[i].length() != 1) {

splitStr[i] = swapFirstAndLastLetterFromWord(splitStr[i]);

}

output.append(" ").append(splitStr[i]);

if (i == 0) {

output = new StringBuilder(splitStr[i]);

}

}

return output.toString();

}

/\*\*

\* Method to swap the first and last letters in a word

\* @param str The string to be swapped

\* @return The swapped string

\*/

private static String swapFirstAndLastLetterFromWord(String str) {

return str.charAt(str.length() - 1) + str.substring(1, str.length() - 1) + str.charAt(0);

}

}

## Source Code (Driver):

import javafx.application.Application;

import javafx.event.ActionEvent;

import javafx.geometry.Insets;

import javafx.geometry.Pos;

import javafx.scene.Scene;

import javafx.scene.control.Button;

import javafx.scene.control.TextField;

import javafx.scene.layout.FlowPane;

import javafx.scene.text.Text;

import javafx.stage.Stage;

/\*\*

\* GUI Class

\* @author Isaac Shoebottom (3429069)

\*/

public class Driver extends Application {

FlowPane flowPane = new FlowPane();

Text textInstructions = new Text("Enter a hex value or English word or phrase:");

TextField textFieldMain = new TextField("");

Button buttonH2D= new Button("Hex To Decimal");

Button buttonE2E = new Button("English to Encrypted");

Text textResult = new Text("Welcome to the Converter App!");

public static void main(String[] args) {

launch(args);

}

@Override

public void start(Stage primaryStage) {

primaryStage.setTitle("Package Calculator");

flowPane.setPadding(new Insets(10, 10, 10, 10));

flowPane.setHgap(10);

flowPane.setVgap(15);

flowPane.setAlignment(Pos.CENTER);

buttonH2D.setOnAction(this::calculateHex);

buttonE2E.setOnAction(this::calculateEncrypted);

textFieldMain.setPrefWidth(150);

flowPane.getChildren().addAll(

textInstructions,

textFieldMain,

buttonH2D, buttonE2E,

textResult

);

primaryStage.setScene(new Scene(flowPane, 250, 200));

primaryStage.setResizable(false);

primaryStage.show();

}

private void calculateHex(ActionEvent actionEvent) {

long input = Converter.hex2Decimal(textFieldMain.getText());

if (input == -1) {

textResult.setText("Invalid input");

}

else {

textResult.setText(Long.toString(input));

}

}

private void calculateEncrypted(ActionEvent actionEvent) {

textResult.setText(Converter.english2Encrypted(textFieldMain.getText()));

}

}

# Section B

## Photos

